Notice of Allowability	Application No.	Applicant(s)	
	10/721,074	KREUZER ET AL.	
	Examiner	Art Unit	
	Leo Boutsikaris	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendment filed on 11/18/2004*.

2. ☒ The allowed claim(s) is/are *1-5*.

3. ☒ The drawings filed on *26 November 2003* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Robert Vincent (Reg. No. 55,970) on 11/18/2004.

The application has been amended as follows:

IN THE CLAIMS

Claim 4 is rewritten as follows:

4. A method for tracking the trajectory in three-dimensions and in time of a plurality of objects in a sample volume comprising the steps of:

a) recording a time-spaced sequence of digital in-line holograms of the sample volume;

b) generating a summed hologram by[, for each] representing each hologram in the time-spaced sequence of digital in-line holograms[, representing the hologram in the sequence] as a series of pixels corresponding to the summed hologram and:

subtracting each pixel in the series of pixels from a corresponding pixel in the summed hologram, for a hologram having an even ordinal number in the sequence of digital in-line holograms; and

adding each pixel in the series of pixels from a corresponding pixel in the summed hologram, for a hologram having an odd ordinal number in the sequence of digital in-line holograms; and

c) numerically reconstructing images of the plurality of objects, at a plurality of depths into the sample volume, representing the trajectories of the objects, from the summed hologram.--

The following is an examiner's statement of reasons for allowance:

Claims 1-5 are allowable over the prior art for at least the reason that even though the prior art discloses a method of recording a sequence of digital in-line holograms of a sample volume in order to measure the position of particles contained in a, for example, fluid medium, the prior art fails to teach or reasonably suggest, regarding claim 1, a method for tracking the trajectory in three dimensions and in time of an object in a sample volume, comprising the steps of subtracting from a first hologram a second hologram in each successive pair of the sequence of N holograms to generate N/2 difference holograms and summing the N/2 difference holograms to generate a summed hologram, regarding claim 2, a method for tracking the trajectory in three dimensions and in time of an object in a sample volume, comprising the steps of subtracting a first hologram, selected from the sequence of N holograms, from each of the remaining holograms of the sequence of N holograms to generate N-1 difference holograms and summing the N-1 difference holograms to generate a summed hologram, regarding claim 3, a method for tracking the trajectory in three dimensions and in time of an object in a sample volume, comprising the steps of subtracting a first hologram, selected from the sequence of N

holograms, from each of the remaining holograms of the sequence of N holograms to generate N-1 difference holograms, and numerically reconstructing an image of the object at a depth into the sample volume for each of the N-1 difference holograms, generating N-1 subject images, and regarding claim 4, a method for tracking the trajectory in three dimensions and in time of a plurality of objects in a sample volume, comprising the steps of recording a time-spaced sequence of digital in-line holograms and generating a summed hologram by representing each hologram in the time-spaced sequence of digital in-line holograms as series of pixels, and by subtracting and adding each pixel of said each hologram from a corresponding pixel of the said summed hologram, as set forth by the claimed combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo Boutsikaris, Ph.D.
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November 18, 2004